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Shanna D. Knights

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EXAMINER

WANG, EUGENIA

ART UNIT

PAPER NUMBER

1795

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/689,876	<b>Applicant(s)</b> KNIGHTS ET AL.	
	<b>Examiner</b> EUGENIA WANG	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 1-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 10-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. In response to the amendment received March 5, 2008:
  - a. Claims 1-15 are pending with claims 1-9 being withdrawn as being drawn to an unelected species.
  - b. The previous rejection of record has been maintained with any changes as necessitated by the amendment. Thus the action is final.

### ***Claim Interpretation***

2. The amendment wherein the catalyst is "supported and loaded" on graphitic carbon is given the claim interpretation that "loaded" does not further define "supported" (as previously claimed, since it does not clearly define the manner in which the catalyst is supported/loaded. Therefore, an indirect supporting/loading can be applied. Accordingly, the previous rejection of record has been applied and maintained. However, an alternate rejection is applied, wherein the claim interpretation of "loaded" is taken to specify direct support (see the rejection wherein US 5489563 (Brand et al.) is the primary reference). Hence, the claimed invention is still seen as unpatentable.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by US 4,131,721 (Fung et al.).

As to claim 10, Fung et al. teach a fuel cell comprising an anode, a cathode, and an electrolyte (col. 1, lines 65-68; col. 2, lines 1-5). Furthermore, Fung et al. teach that the electrodes include electrocatalyst, wherein one embodiment includes graphitized carbon (graphite) (col. 4, lines 16-30). In the broadest interpretation, it can still be said that the graphitized carbon mixed into the electro-catalyst provides some support to the electrocatalyst, wherein since the graphitized carbon and electro-catalyst are mixed together, the catalyst is loaded onto the graphitized carbon, and thus the catalyst is supported and loaded on the graphitic carbon. Although Fung et al. do not specifically disclose the relative oxidative corrosion of graphitized carbon, graphitized carbon is inherently more resistant to oxidative corrosion than carbon black. This position is taken since both Fung et al. and the instant application utilize the same anode support.

Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection.

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

“In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the

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allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.” Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)

In the case of the instant application the basis for expectation of inherency is that Fung et al. and the instant application utilize the same anode support.

The Examiner requires applicant to provide that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product.

Whether the rejection is based on inherency’ under 35 U.S.C. 102, on prima facie obviousness’ under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted].” The burden of proof is similar to that required with respect to product-by-process claims. In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).

4. Claims 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Fung et al., as applied to claim 10, as evidenced by US 5096560 (Takai et al.).

As to claims 11 and 12, Fung et al. do not specifically disclose the  $d_{002}$  spacing (3.56 angstroms or less, as required by claim 11 and 3.45 angstroms or less, as required by claim 12). However, the  $d_{002}$  spacing is an inherent property of graphitic carbon. Takai et al. is used as an evidentiary piece to show this property. Takai et al. states that graphitic carbon has an average interlaminar spacing ( $d_{002}$ ) of 3.35 to 3.42 angstroms (col. 5, lines 20-24).

As to claim 13, Fung et al. do not specifically disclose the BET surface area of graphitic carbon (less than  $230 \text{ m}^2/\text{g}$  as required by claim 13). However, the BET

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surface area of graphitic carbon is inherent. Takai is used as an evidentiary piece to show this property. Takai et al. states that graphitic carbon has a specific surface area of 50 m<sup>2</sup>/g or more (col. 5, lines 15-20).

5. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by US 5,277,996 (Marchetti et al.).

As to claim 10, Marchetti et al. teach a fuel cell comprising an anode, a cathode, and an electrolyte (col. 3, lines 2-6). Moreover, Marchetti et al. teach a graphitized carbon substrate layer with an anchor layer and a platinum catalyst layer on top of it (col. 3, lines 7-20). Since the catalyst is on top of the graphitized carbon, it indirectly provides support for the catalyst layer, and thus the catalyst is supported on the graphitic carbon. Likewise, the catalyst is said to be indirectly loaded onto the graphitized carbon. Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Also, limitations appearing in the specification but not recited in the claim are not read into the claim. See *In re Zletz*, 893F.2d 319, 321-22, 13 USPQ2d, 1320, 1322 (Fed. Cir. 1989).

Although Marchetti et al. do not specifically disclose the relative oxidative corrosion of graphitized carbon, graphitized carbon is inherently more resistant to oxidative corrosion than carbon black. This position is taken since both Marchetti et al. and the instant application utilize the same anode support.

Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but

the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection.

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In *re* Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

“In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.” *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)

In the case of the instant application the basis for expectation of inherency is that Marchetti et al. and the instant application utilize the same anode support.

The Examiner requires applicant to provide that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product.

Whether the rejection is based on inherency’ under 35 U.S.C. 102, on prima facie obviousness’ under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted].” The burden of proof is similar to that required with respect to product-by-process claims. In *re* Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).

6. Claims 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Marchetti et al., as applied to claim 10, as evidenced by US 5096560 (Takai et al.).

As to claims 11 and 12, Marchetti et al. do not specifically disclose the  $d_{002}$  spacing (3.56 angstroms or less, as required by claim 11 and 3.45 angstroms or less, as required by claim 12). However, the  $d_{002}$  spacing is an inherent property of graphitic carbon. Takai et al. is used as an evidentiary piece to show this property. Takai et al. states that graphitic carbon has an average interlaminar spacing ( $d_{002}$ ) of 3.35 to 3.42 angstroms (col. 5, lines 20-24).

As to claim 13, Marchetti et al. do not specifically disclose the BET surface area of graphitic carbon (less than  $230 \text{ m}^2/\text{g}$  as required by claim 13). However, the BET surface area of graphitic carbon is inherent. Takai is used as an evidentiary piece to show this property. Takai et al. states that graphitic carbon has a specific surface area of  $50 \text{ m}^2/\text{g}$  or more (col. 5, lines 15-20).

### ***Response to Arguments***

7. Applicant's arguments filed March 5, 2008 have been fully considered but they are not persuasive.

It is noted that Applicant's arguments are mostly responses to Examiner's response to arguments, as set forth in the previous office action.

Applicant argues that "supported on" must be read in light of the specification.

Examiner respectfully disagrees.

(1) With respect to Fung et al., the electrocatalyst mixture (of platinum and graphitized carbon) can be interpreted to support the particles in some manner, as the graphitized carbon and platinum are within the same mixture and thus are touching one another.



(2) With respect to Marchetti et al. Even though there is an intermediate layer between the graphite and catalyst, the graphite still does provide support for the catalyst - indirect support.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the fact that the "supported" is limited to directly attached to and in contact with) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Also, limitations appearing in the specification but not recited in the claim are not read into the claim. See *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d, 1320, 1322 (Fed. Cir. 1989). Since Applicant has not clearly set forth the type of support in the claim language and has failed to provide proof as to how Examiner's interpretation of the claim language fails to read on the claimed invention, the previous rejections of record are maintained.

Applicant submits that the amended claim language ("supported and loaded on graphitic carbon") limits the claim language to directly supported.

Examiner respectfully disagrees. The term "loaded" provides no further definition than supported. Without constraints placed on what "loaded" specifically pertains to, the claim interpretation of having being indirectly loaded on is still applicable in the same

manner that indirectly supported on. Therefore, the response to arguments, as above to the claim language "supported on" can be applied to "loaded on" as well.

It is noted that "supported and loaded on" also is seen as a product by process limitation at the moment (since the type of support and loading is not clearly defined within the claim). Since all of the claimed elements are present in Fung et al. and Marchetti et al. (i.e. cathode, electrolyte, anode, anode catalyst with catalyst and graphitic carbon), the structure of Fung et al. and Marchetti et al. are seen to be the same as the claimed invention.

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

"The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292

(Fed. Cir. 1983). *Ex parte Gray*, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). See MPEP section 2113.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the fact that the "supported and loaded on" is limited to direct support) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Also, limitations appearing in the specification but not recited in the claim are not read into the claim. See *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d, 1320, 1322 (Fed. Cir. 1989). Since Applicant has not set forth the type of support in a manner that clearly structurally defines the claimed invention over the prior art and has failed to provide proof as to how Examiner's interpretation of the claim language fails to read on the claimed invention, the rejections of record are maintained.

### ***Claim Rejections - 35 USC § 102/103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 10, 13, and 14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 5489563 (Brand et al.).

As to claim 10, Brand et al. teach of a catalyst for use in a fuel cell, such as a polymer electrolyte membrane fuel cell (col. 1, lines 5-11). By the recitation of having the inventive catalyst for use in the fuel cell, the fuel cell itself with such a catalyst is taught. A fuel cell inherently includes a cathode, an anode, and an electrolyte, as is required for functionality. (Also note that a polymer electrolyte membrane fuel cell is particularly mentioned, wherein the electrolyte is named to be a polymer, and wherein

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typical fuel cells include cathode and anodes (col. 1, lines 5-15)). It is also noted that the anode comprises a catalyst (col. 1, lines 5-15). It is noted that the present invention is a catalyst for electrodes (and thus is applicable to both cathode and anode electrodes) (col. 1, lines 5-10). Brand et al. further continues to teach the specifics of such a catalyst; the catalyst is a platinum alloy present on a conductive carbon carrier (platinum alloy supported on a conductive carbon carrier) (col. 2, lines 50-61). More specifically, graphite, conductive carbon black, graphitized black are used as the conductive carrier, wherein a graphitized black Vulcan XC-72 was used as the carrier for all of the catalysts (col. 4, lines 1-3; col. 4, lines 46-48). Although Brand et al. do not specifically disclose the relative oxidative corrosion of graphitized carbon, graphitized carbon is inherently more resistant to oxidative corrosion than carbon black. This position is taken since both Brand et al. and the instant application utilize the same anode support.

Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection.

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

“In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the

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allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.” Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)

In the case of the instant application the basis for expectation of inherency is that Brand et al. and the instant application utilize the same anode support.

The Examiner requires applicant to provide that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product.

Whether the rejection is based on inherency’ under 35 U.S.C. 102, on prima facie obviousness’ under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted].” The burden of proof is similar to that required with respect to product-by-process claims. In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).

Alternately, it can be said that Brand et al. is not clear as to which electrode the catalyst is applied to and that only a half cell cathode electrode is tested (as set forth in col. 7, lines 54-58).

However, even if given this interpretation, the claimed invention (catalyst supported on graphitic carbon for the anode side) would have still been obvious. Brand et al. do mention that platinum/platinum alloy catalysts (such as the one that is taught) are known to be used as electrode catalysts for both the anode and the cathode electrodes in a fuel cell (col. 1, lines 5-9). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply platinum alloy catalyst supported on a graphitized black Vulcan XC-72 carrier, as taught by Brand et

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al., to that of both the cathode and anode electrode, since Brand et al. also teaches that the same materials are used for both the anode and cathode catalyst. Such an action would have resulted in the predictable result of the catalyst functioning in the same manner for either electrode (as a catalyst). It has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

As to claims 13 and 14, Brand et al. teach that the graphitized black Vulcan XC-72 used as the carrier (catalyst support) for all of the catalysts has a surface area of 85 m<sup>2</sup>/g (col. 4, lines 46-50). (85 m<sup>2</sup>/g is less than 230 m<sup>2</sup>/g, as required by claim 13 and is about 86 m<sup>2</sup>/g, as required by claim 14).

9. Claims 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Brand et al., as applied to claim 10, as evidenced by US 5096560 (Takai et al.).

As to claims 11 and 12, Brand et al. do not specifically disclose the d<sub>002</sub> spacing (3.56 angstroms or less, as required by claim 11 and 3.45 angstroms or less, as required by claim 12). However, the d<sub>002</sub> spacing is an inherent property of graphitic carbon. Takai et al. is used as an evidentiary piece to show this property. Takai et al. states that graphitic carbon has an average interlaminar spacing (d<sub>002</sub>) of 3.35 to 3.42 angstroms (col. 5, lines 20-24).

#### ***Claim Rejections - 35 USC § 102/103***

10. Claims 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 4810594 (Bregoli et al.) in view of Fung et al.

As to claim 10, Bregoli et al. teach that a fuel cell comprises an anode, a cathode, and an electrolyte (col. 1, lines 15-17). Bregoli et al. teaches that graphitized carbon is used as the cathode catalyst support (col. 3, lines 65-68; col. 4, lines 1-7). It is noted that Bregoli et al. recognizes that graphitized carbon has better resistance corrosion than carbon black (col. 3, lines 65-68; col. 4, lines 1-7). (This better corrosion resistance would inherently encompass all corrosion including the oxidative corrosion as claimed by the instant application.) Furthermore, if it is argued that Bregoli et al. do not specifically disclose the relative oxidative corrosion of graphitized carbon, graphitized carbon is inherently more resistant to oxidative corrosion than carbon black. This position is taken since both Bregoli et al. and the instant application utilize the same anode support.

Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection.

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

“In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.” Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)



In the case of the instant application the basis for expectation of inherency is that Bregoli et al. and the instant application utilize the same anode support.

The Examiner requires applicant to provide that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product.

Whether the rejection is based on inherency' under 35 U.S.C. 102, on prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that required with respect to product-by-process claims. In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).

Bregoli et al. do not teach the use of the graphitized carbon as the anode support. However, Fung et al. teach that graphitized carbon is well suited for long-term use as a cathode but can also be used as the anode electrode (col. 4, lines 16-31). The motivation for using graphitized carbon as the anode material is in order to provide the same long-term use. Therefore, it would have been obvious to one of ordinary skill at the time the invention was made to use graphitized carbon as the anode material in order to provide the same long-term use. Furthermore, one of ordinary skill in the art would have been able to ascertain using graphitized carbon as the anode support with the predictable result of it acting in the same manner (as Fung et al. teach that graphitized carbon can be used in both the anode and cathode). It has been held to be within the general skill of a worker in the art to select a known material on the basis of

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its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

11. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bregoli et al. in view of Fung et al., as applied to claim 10, as evidenced by Takai et al.

As to claims 11 and 12, Bregoli et al. do not specifically disclose the  $d_{002}$  spacing (3.56 angstroms or less, as required by claim 11 and 3.45 angstroms or less, as required by claim 12). However, the  $d_{002}$  spacing is an inherent property of graphitic carbon. Takai et al. is used as an evidentiary piece to show this property. Takai et al. states that graphitic carbon has an average interlaminar spacing ( $d_{002}$ ) of 3.35 to 3.42 angstroms (col. 5, lines 20-24).

As to claim 13, Bregoli et al. do not specifically disclose the BET surface area of graphitic carbon (less than  $230 \text{ m}^2/\text{g}$  as required by claim 13). However, the BET surface area of graphitic carbon is inherent. Takai is used as an evidentiary piece to show this property. Takai et al. states that graphitic carbon has a specific surface area of  $50 \text{ m}^2/\text{g}$  or more (col. 5, lines 15-20).

12. Claim 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Fung et al., Marchetti et al., or Bregoli et al. in view of Fung et al., as each individually applied to claim 10, in further view of Takai et al.

None of Fung et al., Marchetti et al., or Bregoli et al. in view of Fung et al. teach the specific BET surface area of graphitic carbon ( $86 \text{ m}^2/\text{g}$ , as claimed).

However, Takai et al. has already been used as an evidentiary piece to show that graphitic carbon has a BET surface area of preferably  $50 \text{ m}^2/\text{g}$  or more. Generally,

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differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). Additionally, Takai et al. teach that heat treatment carried out at a temperature of 800 to 3000°C in a non-oxidizing atmosphere for 5 to 20 hours is used to form graphitic carbon and its sharp pore size distribution (col. 5, lines 1-12). Therefore, the heat treatment affects the pores and thus the porosity (including the surface area of the porosity). Thus the surface area of the pores is a result effective variable, which can be optimized for different purposes (i.e. more porous for better ion conductivity, or less porous for better mechanical strength). It would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the surface size of the pores, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). It has been held that discovering that general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art *unless* there is evidence indicating such ranges is critical. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969).

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13. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fung et al., Marchetti et al., Brand et al., or Bregoli et al. in view of Fung et al., as each individually applied to claim 10, in further view of US 5681435 (Joshi et al.).

None of Fung et al., Marchetti et al., Brand et al., or Bregoli et al. in view of Fung et al. teach the addition of  $Ti_4O_7$  into the carbon support.

Joshi et al. teach the inclusion of Ebonex (a conductive  $Ti_4O_7$  material) in the anode structure of a precious metal oxide and graphite support (col. 4, 51-67; col. 5, lines 1-11). The motivation for wanting to include  $Ti_4O_7$  in the anode is to prevent decay in the performance of the anode (col. 5, lines 1-11). Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to add  $Ti_4O_7$  into the anode material, as taught by Joshi et al., in order to prevent performance decay.

### ***Response to Arguments***

14. Applicant's arguments filed March 5, 2008 have been fully considered but they are not persuasive.

Applicant argues that Bregoli et al. teaches away from the use of graphitic carbon as the catalyst support for the anode (since carbon black is preferred).

Examiner respectfully disagrees. Although Bregoli et al. may prefer carbon black for the anode catalyst support, this is not a teaching away from using graphitic carbon as the catalyst support. Bregoli et al. does not specifically say that graphitic cannot be used or cannot function as the anode catalyst support. The preference of one material does not equate to a teaching away of all other materials. Examiner submits that since

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Bregoli et al. does not specifically talk about how graphitized carbon cannot be used in the anode or how its use is detrimental to anode functionality, Bregoli et al. does not teach away from using graphitized carbon as the anode support.

Applicant argues that the combination of Fung et al. and Bregoli et al. does not yield the claimed subject matter, since the graphitic carbon of Fung et al. is not used as the catalyst support (only as a mixture with the catalyst and thus a support for the anode electrode rather than the catalyst support).

Examiner respectfully disagrees with Applicant and submits that Applicant might have misinterpreted the rejection. Fung et al. is being relied upon to teach that graphitized carbon is a known conductive substance that is used an anode (not as a particular support within the anode element). Furthermore, it is taught that graphitic carbon has better long-term use. Accordingly, the position set forth is that one of ordinary skill in the art would have found it obvious that graphitized carbon could replace carbon black as a conductive anode substance in an anode (whether it be the anode support or the catalyst support) with the predictable result that it would function in the same manner (in this case, as the catalyst support with a better long-term use). Applicant has addressed how one of ordinary skill in the art at the time the invention was made would not have found it obvious to replace one conductive material used in an anode (carbon black as taught by Bregoli et al.) with another conductive material used in an anode (graphitized carbon, as taught by Fung et al.). Since both materials are conductive materials used in an anode, Examiner submits that it would have been

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obvious to one of ordinary skill in the art to replace one with the other with the expectation that they would function in the same manner.

Applicant argues that the reliance on *In re Leshin* does not support the obviousness of, since the fact pattern is not analogous since (a) the primary reference leads away from the selection sought to be patented (i.e. Bregoli et al. teaches carbon black and not graphitized carbon) and (b) the secondary reference teaches the use of graphitized carbon for an entirely different purpose (i.e. Fung et al. teaches graphitized carbon as the anode support not as the anode catalyst support).

Examine respectfully disagrees. With respect to (a), as set forth above, the primary reference does not teach away from using graphitized carbon as the catalyst support (Bregoli et al. does not mention how graphitized carbon cannot be used as a catalyst support in the anode or would not function as a catalyst support in the anode). With respect to (b), as set forth above, the secondary reference is not used from an entirely different purpose. They are both used as a conductive material within the anode (whether it be the anode support or the catalyst support). Therefore, graphitized carbon is an art recognized material used in the anode (whether it be the anode support or the catalyst support).

Applicant comments that the combinations with respect to the dependent claims (11-15) that the same arguments applied to independent claim 10 also applies to the dependent claims.

Examiner notes this. However, to make the record clear Examiner still must note that the combination of the dependent claims have not been applied. Accordingly

Applicant does not argue how the combination (of Fung et al., Marchetti et al., or Bregoli et al. in view of Fung et al. with Takai et al. or Joshi et al.) is not proper. Therefore, the Examiner maintains the obviousness rejections and upholds the rejection to the independent claim 10, as above.

### ***Conclusion***

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EUGENIA WANG whose telephone number is (571)272-4942. The examiner can normally be reached on 7 - 4:30 Mon. - Thurs., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. W./  
Examiner, Art Unit 1795

|  
/Gregg Cantelmo/  
for E. Wang, Examiner of Art Unit 1795